ELECTRONIC SYSTEMS CENTER

Intelligence, Surveillance, Reconnaissance Integration

Systems Integration Working Group: AF DCGS Overview

28 July 2004

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U.S. AIR FORCE

Overview

Responsible for:

- **Integrated SR & LX planning and execution of rapid fielding modifications**
  - Including UCN oversight & execution

FY04 budget: $21.083M (3080)

Primary team members:

- **Leads: Mr. Webb, Maj. Samson**
- **Engineering: Mr. Whitcomb**
- **IMINT/MASINT: Ms. Landau, LX**
- **RFINT: Capt O'Connor, Mr. Hawkins**
- **DISC Site Support Lead: Mr. Smith**
- **ACC, AFC2ISRC, NGA Reps**

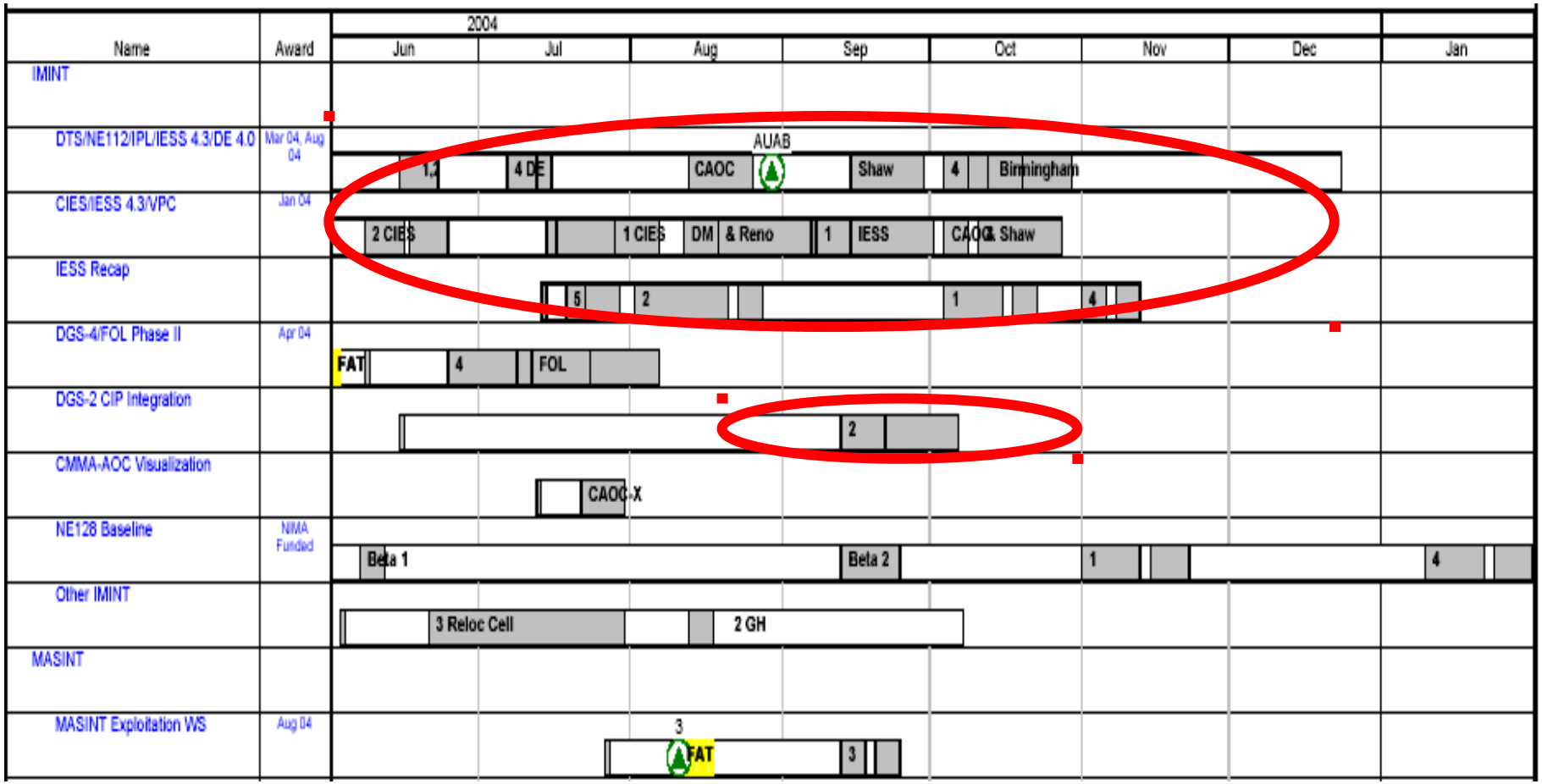
Urgent & Compelling Requirements (Current Real-World WMS)

Completed/Cancelled	#	Decision date	Sch/Need
✓ DGS-2 DAWS/DCSP	R0-03-04-02	2 Apr 04	12 Jun/Apr-15
✓ GH METIS S/W upgrade	ACC-04-03-07	5 Apr 04	28-Apr/26-Apr $250K
✓ Cooperative Geolocation	ACC-04-02-01	early Feb 04	15-Mar/11-Mar $870K
✓ SYERS W/S DTS at DGS-1	ACC-04-14	18 Mar 04	7-Apr/2
✓ VPC at DGS-2	ACC-03-05-05	18 mar 04	24-Apr/24-Apr
✓ Email DMZ—interim	ACC-04-02-03	mid Feb 04	30 Apr/3-Apr $0K
✓ HyperWide Signal Integ	ACC-04-03-08	5 Apr 04	16-Apr/16-Apr $50K
✓ MASINT Connectivity Upgrade	BE-04-03-03	27 Apr 04	30 Jun/
✓ VPC @ DGS 4	USAFE 04-03-29	16 Apr 04	3-May/3-May
✗ MOB-B to DGS-4		Apr 04	Will make Pri-2 ?/$975
✗ VPC @ DGS 1	LY-03-02-011		Cancelled $216-6
✗ DGS-2 Threatnet Extension	ACC-04-02-01		Cancelled
✗ APS Patch at DGS-1/2			Cancelled
✗ IESS Upgrade @ DGS 2	LX-04-004		Cancelled
✗ Email DMZ—longterm	BE-02-10-29	24 May	ACC Will make Pri-2 Rom

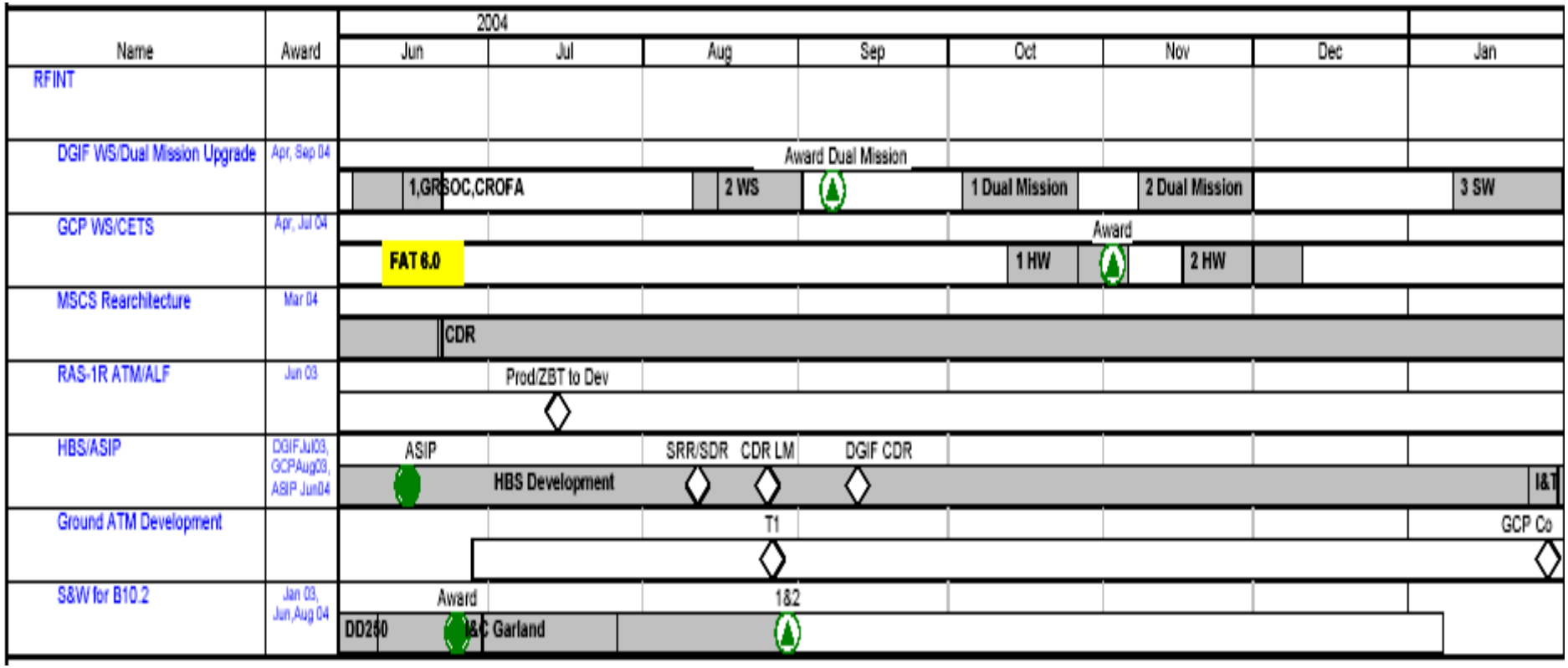
Currently In Work

- WAN/MOB-B Connectivity ACC-04-03-06 5 Apr 04 TBD/17 May $250K
  - On hold until after CIES install dues site issues (ACC/Site Decision)
- GH Task MGMT BE-04-03-02 17 May 04 9 Aug/awaiting
  - Phase 1 completed 12 June—phase 2 to begin Aug after CIES and JFEX
- Predator S/W Upgrade TBD 26 Jul 04 16 Aug/ 16 Aug <$50K
- ***In-Bound--*** None for now!

Mod Programs
IMINT / MASINT Programs



Mod Programs
RFINT Programs



Status & Issues

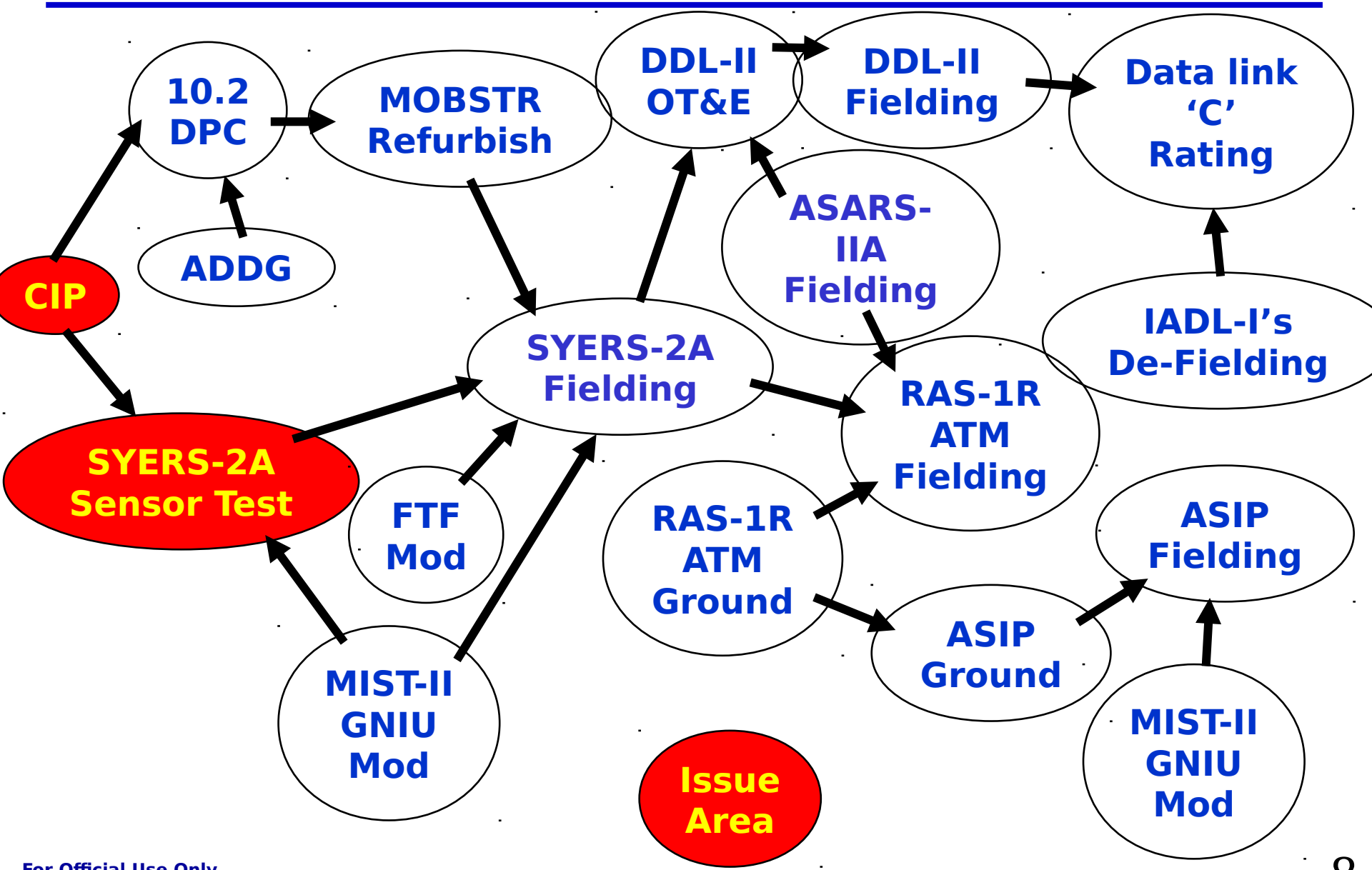
- **ASIP Status**

- **ISSUE: CIP install into DGS-2**
  - ATM / DDL-II Migration Plans
- **ISSUE: FY05 Spend Planning**
- **ISSUE: CIES Schedule**
  - IMINT agenda item
- **RISK: SYERS-2 over MOBSTR/FOL**
  - SYERS-2 agenda item

ASIP Status

- **Contract Modifications Awarded in July to re-baseline GCP & DGIF integration efforts (LM & Raytheon, respectively)**
- **RAS-1R ATM funding shortfalls remedied**

ATM Functional Dependencies



DGS 2 CIP Integration schedule

Task Name	Start	Finish
Project Assigned		
Acquisition Plan Appr		Wed 3/17/0
RFP Created		
Proposal Prep	Wed 3/31/04	Wed 4/14/04
Proposal ERB(17/05)/**CCB**(28/05) **Approved**	Wed 4/07/04	Wed 4/28/04
Contractor Integration Preparation	Thu	
Site Implem		Wed 8/11/04
Implementat (12/07)/**CCB**(29/07) **Approved**	Thu 7/8/04	Mon 8/2/04
System Delivery Accomplished	Mon 6/21/04	Fri 9/3/04
1067 Closed	Mon 9/6/04	Fri 10/1/04

Qtr 1, 2004 | Qtr 2, 2004 | Qtr 3, 2004 | Qtr 4, 2004

Jan | Fe | Ma | r | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec

FY05 Spend Plan

Combat Support Effort	FY05 PB	FY05 w/ PBD funds	FY05 w/o PBD funds
TOTAL	**18.057**	**21.210**	**12.300**
GeoSpatial (COW)		1.400	1.400
RFINT/ATM Deployment		8.200	8.200
MSCS Modernization Ph 2 & 3 (PBD 744)		4.500	2.700
DGIF Option (Hook112/CSEL)		1.100	0
CETS Baseline 8.0		1.400	0
DGIF Baseline v2.3		1.350	0
CETS Option (AOIO, ATM, EAU, Nile)		0.160	0
DGIF Option AOCO		0.100	0
CETS Option Octagon 10		0.900	0
DGIF Option TADIL J Integration		1.600	0
NGA Integration		0.500	0

Systems Integration Working Group: SYERS-2 via MOBSTR/FOL Modeling & Simulation

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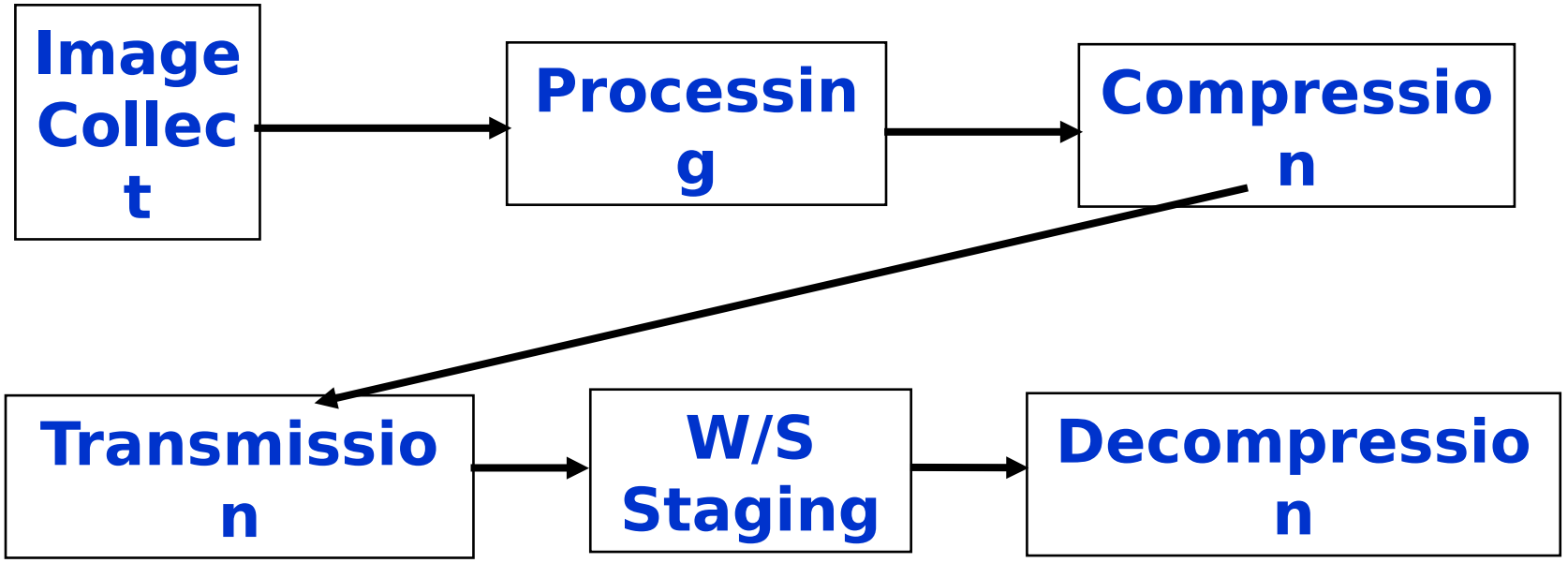
SYERS-2 over MOBSTR/FOL

- **Issue/Risk: Timelines to exploit SYERS-2 via MOBSTR/FOL unacceptable to users**
- **Impact: Full SYERS-2 capabilities not realized due to image latency concerns**
- **Discussion:**
  - SYERS-2 file sizes larger than legacy SYERS
  - Users requested help utilizing SYERS-2 over MOBSTR/FOL
- **Way Ahead: (Near Term—w/o added bandwidth)**
  - Model/Simulation: predict latency due to various tasking strategies, image compression, transmission queue management schemes
  - Testing: playback of SYERS-2 data over MOBSTR link
  - Training: new sensor capabilities, tasking modes
- **Long Term: Identify req'd bandwidth for SYERS-2 through simulation & SYERS-2 thread analysis**

Modeling & Simulation

- **Simple, analytical model built to predict image latency under real-world loading and bandwidths**
- **Model validated utilizing data from 2002 ETP SYERS-2 O-6 decision briefing**
  - Within ~10 seconds
- **Driven by image collection data**
  - Time of collect, imaging mode
  - Can utilize actual SYERS & SYERS-2 collection plans, or artificial plans
- **Key variables in model:**
  - Image compression ratio, processing times, Tx bandwidth & efficiency
- **Outputs:**
  - Predicted latency of images from ground terminal receipt to exploitation workstation under nominal loading conditions
  - Discreet (each image latency) & statistical (mean, 90%-ile, maximum) quantitative analysis

Current Model Elements



Modeling & Simulation (cont)

- **Status:**
  - Preliminary model constructed & sent out for review
  - Artificial image collection generator built
  - Request for actual SYERS & SYERS-2 queue data made through CFSR (Goodrich)
- **Next steps:**
  - Continue model thread analysis with Goodrich engineering
  - Populate model with actual SYERS & SYERS-2 collection data
  - Run baseline SYERS & SYERS-2 data through model for FOL configuration (Best & Worst cases)
  - Run scenarios: compression, bandwidth expansion, altered SYERS-2 collection schemes (Optimize to find 'acceptable' latency)

Modeling & Simulation (cont)

- **Example:**
  - Target Density: 20 images/hr
  - Compression 3:1
  - Bandwidth 8Mb/s w/ 20% O/H
- **Mean = 8:58 90% ile =**